

OU fury over BBC lecture ban

by Charlotte Barry
Academic staff at the Open University reacted furiously this week to the BBC ban on a nuclear arms lecture by the university's dean of science.

An emergency motion protesting against the last-minute cancellation of the screening of Professor Mike Pentz's lecture is to be debated by the OU senate next Thursday.

The 25-minute lecture was to have been transmitted on BBC2 last Sunday as part of the OU's Open Forum slot. Instead an earlier lecture in the series of talks given by distinguished academics was repeated.

The BBC's head of continuing education, Mr Don Gratton, was meeting the OU's acting vice-chancellor, Professor Geoffrey Vesey, at the end of this week to explain why the programme was scrapped.

The last-minute decision by the BBC followed a month of protracted negotiations between the corporation and the university. Soon after Professor Pentz stopped in at short notice to deliver the lecture in place of Lord Briggs, the university's chancellor, his title was

queried and amended.

Two days before the lecture "Towards the final abyss—a scientist's view of the nuclear arms race" was given at Imperial College, London, on November 7, the BBC decided to cancel both the recording and transmission.

The head of BBC/OU productions, Mr Bob Rowland, told the OU that he considered the subject of the lecture too political and not academic enough. After a day of talks the BBC agreed reluctantly to go ahead with recording the lecture, before an invited audience, but would not commit itself to transmitting it.

Professor Pentz, who is a physicist, used to work for the European Centre for Nuclear Research in Geneva. He is chairman of the Milton Keynes Peace Council and a member of the national council of the Campaign for Nuclear Disarmament.

He said this week that the objections to his lecture came from the BBC before he had even written what he intended to say. "At no stage has the BBC bothered to communicate directly with me and I find that slightly offensive," he added.

Professor Pentz said that the final script of the lecture had been "imperfectly factual". "I am very concerned about the lack of public information about what is happening to the nuclear arms race."

"It is most important that this lecture should be transmitted because it contains information that people need and which should not be held back. They should be left to make up their own minds about the subject," he said.

The motion being put before the university senate "views with grave concern the action taken of the BBC in refusing to transmit the lecture by Professor Michael Pentz on the nuclear arms race and requests the BBC to reverse its decision."

A BBC spokeswoman said this week that the Open Forum lectures were expected to be related to issues of the university and higher education. But a spokesman for the university said the Open Forum committee had agreed that the lectures should be in the area of expertise of the academic concerned.

Leicester staff fight foundation course threat

by David Jobbins

The threatened loss of foundation art and design courses at Leicester Polytechnic is being fought by senior staff.

They are opposed to plans to concentrate the courses at Loughborough College of Art in what polytechnic director Mr David Bethel regards as the first of a series of moves towards rationalization in Leicestershire.

The polytechnic governors' academic development committee, which accepted that there was room only for one foundation course in the county, has recommended that it should be at Loughborough.

This is being hotly contested by the art and design faculty board, which has expressed opposition to any decision to reduce the number of courses, but says that if only one is to survive, it should be at Leicester.

The polytechnic's academic board

has supported attempts to retain the course at Leicester.

At its last meeting the board acknowledged that the county council might have compelling reasons to review the dual provision of foundation courses, but made clear that this must be supported by a "thorough qualitative appraisal" of relative educational merits.

A resolution passed by the board says that if Leicestershire decides to keep only one foundation course it should be at the polytechnic.

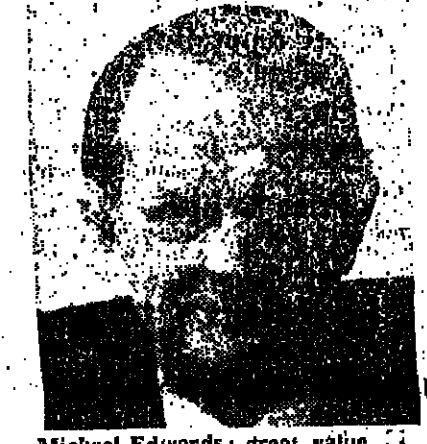
The faculty board has drawn attention to differences between Leicester, where there are 13 undergraduate and four postgraduate courses, and Loughborough which has six undergraduate courses. It also believes Leicester is more accessible to a majority of intending students.

Mr Bethel warned the academic board meeting of the dangers in further delay—which would result in at least one academic year's postponement of the new 'joint' course.



More than 11,000 students marched through London last week to protest against the Government's new method of financing student unions. The issue is expected to dominate the NUS conference, which begins tonight in Margate.

New provost for City



Michael Edwards: great value

The head of a profit-making subsidiary of British Steel is to be the new provost of the City of London Polytechnic.

Mr Michael Edwards, 55, has been managing director of BSC (International) since it was set up in 1971. From £8m then, profits rose to £20m in 1979-80 against the background of BSC's declining fortunes.

The company ran BSC subsidiaries abroad, mainly concentrated in Australia, New Zealand, Canada, India, Argentina, South Africa and West Africa, manufacturing heavy engineering products, iron and steel pipes, and small-scale steel-making.

When the onset of BSC's cash crisis in the United Kingdom a programme of disposals began, with good prices negotiated for several of the interests.

Mr Edwards is also chairman and managing director of BSC (Overseas Services), which won the Queen's Award for export achievement in 1977 and 1978 for its activities providing technical and project management services for steel industry developments throughout the world.

Between 1967 and 1971 he was BSC's director of legal services and handled the complex merger of the 14 companies brought into BSC—the largest industrial merger ever carried out in Britain.

Previously a travelling journalist, Mr Edwards was educated at Angkor Grammar School and University College, Oxford. As deputy legal adviser to Courtauld in the early 1960s, he was deeply involved in the textile giant's rapid expansion.

A major problem facing the new provost is City's accommodation problem, with a large number of leases on existing buildings falling due over the next few years.

He regards this and other aspects of his new job as a challenge. "It is an honour to lead a team of staff which has already achieved so much."

Mr Stephen Bragg, vice-chancellor of Brunel University, is to resign at the end of next year.

He is to take up a consultancy with the Science Research Council, in which he will continue to contribute to the liaison between universities and industry, which is one of his special interests.

"Mr Bragg became vice-chancellor in 1971."

Compulsory training proposal for 16-19 age group

by Patricia Santinelli

Radical proposals which would make it compulsory for all 16 to 19-year-olds to undertake some form of education and training for work were put forward by head teachers and principals of sixth form and further education colleges this week.

The joint document, which recommends a universal scheme of education and training for the entire age group, to be administered by a single department of education and training, has been sent to all M.P.s, Ministers of Education, Industry and Employment and to the TUC for early discussion.

Mr David Hart of the National Association of Head Teachers introducing the document said this was a unique occasion which had brought them together. They all believed that the needs of the age group were so great that they transcended any division of interest.

He described the suggestions made by the Macfarlane Committee

investigating provision for 16 to 19 and due to report later this year as disappointing and completely in the wrong direction.

"It is stupid to be discussing whether young people should be educated in sixth forms or tertiary colleges. We should be talking about how they are going to be educated, not where," he said.

The group which has the support of the National Association of Teachers in Further and Higher Education, Youthaid and the National Youth Bureau, is extremely concerned at the lack of overall policy on educational provision for 16 to 19. This is particularly so because of rising unemployment, among school-leavers, with at least 44 per cent of these unemployed or in jobs where they receive no training, while even tertiary colleges, to only 23 per cent of the age group.

For this reason it wants the Government to look at example of good

practice in other countries and end the division between schools and colleges. It believes that there is a great danger that the education system will be reformed and altered in ad hoc manner rather than rationally purely in response to an emergency.

The proposed new department of education and training would bring together under one ministry the "inadequate and fragmented provision currently administered by the Department of Education, Employment and Industry."

The DET, as it would be called, would have the responsibility for unifying the two separate sets of regulations applying to teachers in schools and those in further education colleges. It would seek the establishment of comparable salary scales and conditions of service for teachers of these age groups within those sectors.

Moreover, it would be responsible for the coordination and rationaliza-

tion of the many existing examination systems into a single system, as well as the validity and national comparability of the vocational examination system.

Under this scheme, local education authorities would provide education and training locally but within national guidelines. This would include the planning of a joint comprehensive education and training service for their use adjusted to suit local needs and the publication of available provision in each area.

In addition they would be responsible for the innovation and establishment of joint provision by the school and further education sectors and by employers.

L.E.A.s would also seek the establishment of a register of the actual education and training being experienced by all young people within the age group, as well as increase the careers service to provide fully for the age group.

Leeds told to lift their closed shop

by David Jobbins

Lecturers' union leaders in Leeds are reluctantly recommending that the post entry closed shop agreement with the city council must be torn up.

Officials of the Leeds liaison committee representing all branches of the National Association of Teachers in Further and Higher Education have undergone a rapid change of heart following strong pressure from their national executive and local legal advice.

The liaison committee was meeting yesterday to consider how to react to its officers' recommendation that Naffes should withdraw from the agreement, which requires all new staff at the polytechnic and colleges in the city either to belong to Naffes or agree to join.

The move follows discussions with

the regional official, Mr Pat Harrigan, who has been acting on behalf of general secretary Mr Peter Dawson.

Naffes branches in Leeds were meeting this week to discuss the recommendation to the liaison committee. A postal ballot to test opinion in the main polytechnic branch—demanded by anti-closed shop members of the union—has been held up pending the outcome of this week's talks.

There is still a strong body of support for the union membership agreement, especially at a number of colleges in the city. But the officers' decision represents the expected victory of national union leaders who regard the agreement as unsatisfactory in itself and an embarrassing propaganda gift to the rival Association of Polytechnic Teachers.

Harder balancing act for Royal Society

by Robin McKie

Science Correspondent

The Royal Society can expect to face problems of tight finances next year, despite "recent successes" in balancing its books, the society's treasurer, Sir John Mason, warned this week. Restricted funds from Government would probably result in cuts in travel grants and fellowship allocations.

Sir John said that of the society's budget of more than £6m, about 55 per cent or £3.2m was supplied by Government through its science vote for education and science. The previous year the Government had supplied £2.87m, it was revealed at this week's launch of the Royal Society annual report.

He added that although salaries had been high because they were tied to university pay settlements, increases in office expenditure had been restricted to 6.7 per cent, which was only one third the rate

of inflation. "We have cut bureaucracy which is why we are in the black this year," Sir John said. "We run a tight ship here, although it will have to be even tighter next year."

It was also revealed that the Royal Society has made recent and strong representation to Government about the poor quality of science teaching at British schools. "It is of vital concern that we get better mathematics, physics and chemistry teachers now in our schools," warned Dr Morris Sugden, the society's physical secretary and vice-president.

"It is a problem of vital concern for there is no sign of improvement in a gloomy situation."

Possible remedies included encouraging people in industry to take up teaching and also for retiring civil servants to become teachers.

Sir David Phillips, the biological secretary, said that in their attempts

to provide places for bright young scientists, a total of 18 research professorships, 10 new senior research fellowships and about 30 other fellowships had been established by the Royal Society. In the first year of the society's new Guest Research Fellows scheme, which is to be supported by up to £50,000, eight out of 21 applicants had so far been aided in scientific visits to this country.

In his final presidential address, Lord Todd, who has now been replaced by Sir Andrew Huxley, urged that responsibility for science and the research councils should be removed from the DES. "I hold that Government needs a high level independent scientific adviser who should be chairman of an advisory council similar to the original Advisory Council on Scientific Policy. He could be whole-time or part-time but he should be independent of any department and should report direct to the Cabinet."

Tory students want inquiry into attack on president

by John O'Leary

Conservative students are demanding an inquiry into violent scenes at Sussex University this week when their federation's president, Mr Peter Young, was attacked at a political meeting.

Mr Peter Lawrence, MP for Barton, raised the incident in the House of Commons on Tuesday and Mr Young was also making representations to Mr Rhodes Boyson, Under-Secretary for Higher Education.

Trouble flared when Mr Young addressed a meeting of the university Conservative Association. After student barracking, the public address system was ripped from the stage and two buckets of water dumped over him.

Accounts vary over whether he was then pulled from the stage or whether he overbalanced while swinging one of the empty buckets. A left-wing protester and fell off, however, both sides agree that he was then punched and kicked before being rescued by the organisers of the meeting.

It was the third recent incident involving Tory speakers at the university and there are fears that a meeting to be addressed by Lord Denning may also be disrupted. Next term Mr Ian Spratt MP and other leading Conservatives are due to speak to this association.

The students' union, named in Mr Lawrence's Parliamentary Question as the body responsible for the incidents, issued a statement deploring the use of violence against Mr Young. Mr Andy Richardson, vice-president of the union, was 'critical of Mr Young's account of the meeting and promised that every effort would be made to maintain order on future occasions.

Mr Young and the two Parliamentary Vice-presidents of FCS, Mr Lawrence and Mr Peter Bottomley, are writing to the Vice-Chancellor of the university, Sir Denis Wilkinson, asking him to take the necessary steps to ensure the safety of speakers.

Bradford students move to counter Ripper threat

Bradford University students will be asking their national union to support the right of women to defend themselves against a physical attack by whatever means necessary at this weekend's NUS conference in Margate.

An emergency motion from Bradford University, where student Barbara Leach was killed by the Yorkshire Ripper last year, is to be put to delegates for a vote.

The "necessary measures" the students are asking for could include weapons although a spokeswoman said that it "depends what you call a weapon. The examples we were thinking of was a belt or similar article. We have not actually specified anything."

The students argue that pedestrians have a fundamental and inalienable right to walk unhindered in the streets. Sexually motivated attacks were on the increase both at night and during the day, which made mockery of police suggestions that women should stay at home, says the motion.

It calls for a number of provisions which protect the safety of women but do not infringe upon individual liberties. One measure

is the provision of "doss, rags" to protect the safety of men and women students who are unable to return home late at night.

University, polytechnic and college authorities and student unions in the north and to some extent throughout the country have checked and reinforced their safety arrangements for staff and students since the murder in Leeds of university student Jacqueline Hill.

At Leeds Polytechnic heads of school have reviewed timetables to ensure students on all courses can leave in groups and in safety. At the London School of Economics students are pressing for increased security at their halls of residence after the stabbing of a student.

But a number of unions and women's groups have resented restrictions which say that women rather than men should not go out at night, and have organised "reclaim the night" marches.

One Leeds University student, seeing a poster warning her against going out alone after dark because of the Ripper attacks, said "This means I should have stayed at home or not gone out unless accompanied, for five years."

Open degrees 'devalued by new system'

Open University students are objecting strongly to proposals for a new system of classifying honours degrees.

They claim degrees awarded since 1973 will be devalued if the new scheme is given the go-ahead.

The OU students' association, (OUSA), has calculated that 18 per cent of students awarded first class honours degrees last year would not get them under the new system. Another 7 per cent would be on the discretionary borderline.

The new proposals were drawn up by the OU honours classification group which identified three basic reasons for changing the system.

These were the need to raise the standard of first and upper-second class degrees; objections to the wide spread of performance standards in the same class of awards; and the difficulty of simply revisiting the old criteria.

The new scheme would continue to use the existing method of calculating a points score based on a student's overall performance. But it would put more emphasis on a consistent full-scale of results than on the points total.

It would also tighten up the criteria and publish them in detail. This is intended to avoid the heartache caused to students in the past by additional criteria which remained secret and subject to change.

The proposals have already been endorsed by the university's academic board, the student affairs and awards board, and the standing committee of the senate. A final decision will be made at next week's full senate meeting.

OUSA agrees that permanent criteria should be published and that a system based on a consistent profile-of-course results will enable more comparability with traditional universities.

It has rejected the proposals on the grounds that the borderlines are too wide and that degrees awarded up to now will be devalued. It is concerned that the university has produced little evidence in favour of a completely new system.

Overseas figures down

With almost half of all applications in 1979, university entry next year, those from overseas students are down by 35 per cent compared with the same time last year.

According to the Universities Central Council on Admissions, they are now confident there will be a substantial decrease in final numbers of overseas candidates, although they cannot predict the figure.

Applications from both men and women home students have both increased, by 1 per cent and 4 per cent respectively. As in previous years, the proportion of women candidates continues to increase.

Overall, total applications have shown a 2 per cent drop, from 60,311 in 1979 to 58,896 in 1980 (both mid-November figures) but this reduction is entirely due to the large drop in overseas applications.

Subjects where there have been substantial increases in applications are dentistry, computing, mathematics and physics. There have been decreases in education, medicine, civil engineering, zoology, economics, law, architecture and history.

The normal closing date for applications is mid-December.

Rent strike called off

The two-year rent strike at the Polytechnic of Central London has been called off following agreement on a compromise solution to what threatened to become an intractable dispute.

The 23.7 per cent rise in weekly rates for rooms in halls of residence, which triggered off the strike, remains.

But students will pay only a 13 per cent increase in line with the rise in grants over the period.

They will be paying less because they will spend less time in their accommodation. Mr Hector, the polytechnic's secretary, said that courses tended to end well before the theoretical 34-week year.

"At the moment we do not grant rebates to students even when they leave before the end of the year. Under this arrangement we are in practice granting rebates to those who wish to leave when their courses end rather than stay to the end of term."

The polytechnic hopes to make up any loss by renting the vacant rooms. Mr Hector said he anticipated no problem in finding enough visitors to London prepared to pay the weekly rent.

Opposition to library site

Renewed opposition to a new site for the British Library came from a group of academics this week following a Government announcement that work on the first phase of a new building for the BL in Euston Road would go ahead.

The Government decision announced last week ended 30 years of debate and discussion about the siting of the library and a move from the British Museum.

The building will, however, be only a modification of the first phase of the original plans. It will cost £72m at 1979 prices and be completed by 1990. A decision on the next stage of the entire project estimated to cost £300m will not be taken until 1984.

This first phase is designed to provide urgent and essential accommodation for book storage and reference services, including those of the Science Reference Library which are currently spread over 16

buildings in London with millions of books stored 10 miles away in Woburn.

But the group of 48 academics led by Professor Hugh Thomas, is the Centre for Policy Studies, determined to go on opposing the move because they fear losing the famous Reading Room which would become redundant once the new building was completed.

Professor Thomas is considering setting up an association of those who use the room to help him and his colleagues press for its retention. He argues that if the new building is to go ahead then it should just be a warehouse for the books which can be ferried to the Reading Room on demand.

But this idea was dismissed by the British Library. It points out that it is currently spending £2,500,000 trying to preserve its books and stop them deteriorating any further so that they remain able to fulfil their purpose. It says interfilming has proved expensive and take far too long.

Dr Butler predicts good response to I levels

by Patricia Santinelli

Universities are likely to make a positive response to Government proposals for the introduction of an intermediate level examination, the Schools Council Convocation heard this week.

The view came from both Dr Clifford Butler, vice-chancellor of the University of Loughborough, and Mr Brian Taylor of the Committee of Vice-Chancellors and Principals, both of whom stressed that this was a personal opinion since the matter had not yet been discussed in committees.

Proposals for the introduction of an intermediate level examination are the equivalent of half an A-level—were announced recently by Mr Mark Carlisle, Secretary of Education and Science, together with recommendations for a 17-plus system.

He asked for responses to the proposals to be made by the end of the year.

Mr John Mann, secre-

tary of the Schools Council, said that although both proposals would help towards providing a proper system of education and training for 16 to 19-year-olds, they still left serious gaps.

"Britain desperately needs a proper system of education and training for that age group. Our efforts in this direction are far behind those of other industrialised countries. Only 40 per cent of our young people are in full-time education with 20 per cent in part-time education compared with Japan, the United States and Germany which has 80 per cent of 15-year-olds in education and training," he said.

Mr Mann said that Britain lacked a coherent system of courses and examinations for the age group. Even if the new examination proposals were adopted there would still be thousands of secondary students who would not be provided for, since neither the 17-plus nor the intermediate course or A

levels would be appropriate for them.

"Unfortunately this gap will not be filled by I levels which the Government has restricted to a limited range of subjects for candidates taking at least two A level subjects. Therefore only a minority of students will be helped," he said.

The council believed target groups for I level should be broadened along the lines it first recommended to the Government. It wants the examination to be available to the 30 per cent of A level candidates who either fail at A level or obtain only one subject. Moreover it thinks it would be a good target for some of those who do not take A levels.

The Schools Council also thought that I levels could be used to provide ancillary subjects to supplement those already being taken, for example I-level foreign language could be added to an A level history or English.

It also wants subjects not normally taken at A level, such as photography, building construction and classical civilisation, to be available at I level.

In spite of its criticisms of the proposals, the council is recommending support for them as a useful step forward in a campaign waged over the last 15 years to broaden the curriculum. Last month it wrote to several leading education organizations.

As far as proposals for a 17-plus course, the council is concerned that in view of the Government's recent interpretation of the Mansell recommendations, this could become a national vocationally based examination which would still result in many able students being lost between 16-plus and A level. The council was also critical of proposals to place the validating arrangements for the examination with a further education organization.

PNL students demand change

Students at the Polytechnic of North London believe a "virtual apartheid" policy on hall charges is driving overseas students away. Now they are calling for changes in the regulations governing hall fees after learning that only six hall places are occupied by overseas students, compared with 70 last year.

Foreign students pay £46.50 per week for accommodation, one evening meal at one of the polytechnic's two halls while their English and Welsh counterparts pay only £23.80. At the other hall, where no meals are included in the price, the overseas rate is £38.10 compared with the home rate of £15.40.

Although the differential dated last year, almost a quarter of places then were occupied by foreign students, divided equally between the two halls.

Mr Chris Crowley, PNL students' union president, said: "We are extremely disturbed by the discrimination of overseas students from PNL's halls. The polytechnic is committed to a multi-cultural and multi-racial society, yet this present position of the halls perpetuates racial and social division."

Student lodgings charges are specifically exempted from the Race Relations Act by order of the Secretary of State for Education.

Fretrade halt hits Manchester

Thousands of adult students in the Manchester area have been hit by the total breakdown of the free trade system between local education authorities.

This year nearly all Manchester's 16 neighbouring LEAs have withdrawn from the "recoupment" scheme which enables adults living outside the city centre to study there at no extra cost.

As a result, Manchester, which is considered to provide the best education facilities for adults outside London, has been forced to cease free trade with its neighbours.

The complete breakdown of the system has affected both vocational and non-vocational courses includ-

ing GCE classes, City and Guilds and courses run by the Business and Technician Education Council at Manchester College of Adult Education, which provides specialist courses for the area's adult population. It has been badly hit by falling enrolments.

Instead of offering free trade facilities, Manchester has agreed to charge an "infill fee" of £55 a year for evening classes attended by students from outside its boundaries.

Only a handful of students have taken the offer, which is believed to be the full economic cost and the £10 paid by locals.

A spokesman for Manchester LEA explained: "We couldn't go on bearing the burden when they have refused to let their students come to Manchester."

John O'Leary

Overseas News

Students arrested in West Bank violence

from Benny Morris

JERUSALEM. The Israeli-occupied West Bank and its universities last week leaving a handful of Arabs and Israelis wounded and several dozen students and school pupils arrested.

The week's violence began on Monday. Immediately after the security forces released 12 Bit Zait University students council members arrested during demonstrations at Bit Zait the week before. The council members had been hauled in for interrogation about the university's "Bulldozer Week", a series of political cultural events which had started on November 12. Two days later, angered by the open display of PLO flags and anti-Israeli slogans and pictures, the Ramallah military governor had ordered the university closed for a week.

The following week was marked by violent anti-Israeli demonstrations by high school students at Ramallah el-Birah and East Jerusalem and by the students of Najah University in Nablus and Bethlehem University.

Bit Zait students refused to allow

the resumption of classes last week until their 12 colleagues were released. But their release on Monday triggered widespread demonstrations around the West Bank. At Bit Zait students threw up road-blocks on the main road and stoned passing Israeli vehicles.

Israeli troops, severely cautioned to restrict themselves to conventional riot control tactics and to resort to shooting live bullets only when "life was clearly endangered", entered the campus and arrested 16 students. Disturbances occurred also in Ramallah and Bethlehem.

The next day, Tuesday, two students at Najah University were shot and slightly wounded after they injured an Israeli soldier on the head with a stone. Bethlehem University students remained out on strike and Arab school children set alight tyres near the old city's Damascus gate in East Jerusalem.

Fifty Arab teenagers from the two main high schools in Nablus were held without charge after the stone-throwing incidents following the shooting.



Israeli troops check identification of Palestinian travellers on the outskirts of strife-torn Nablus on the occupied West Bank.

Anti-unionism angers members

from Geoff Maslen

MELBOURNE. The Australian Federation of College Academics has warned its members against applying for positions at new colleges being established in the far north of Western Australia by the state government.

"The new colleges, Karratha College and Hedland College, for up to 250 pupils, will be built in the Pilbara district, more than 1,200 kilometres north of Perth, and beyond the Tropic of Capricorn. Academic positions at the colleges have been advertised throughout Australia and internationally. But according to the Federation of College Academics the state government has set salary scales without consulting with any organization representing academic staff and they do not accord with those payable in other Western Australian colleges."

The federation says the annual leave of five weeks stretched to positions in the Pilbara colleges is less than the six weeks available in other colleges.

"The district allowance attracts normal taxation. If housing is supplied the rental, electricity and air conditioning charges may compare unfavourably with rates applying to employees of major companies in these towns in what is a region of

high cost living", the federation claims.

The staff in the Pilbara colleges will not be affiliated with their state body or the federation and so will not have access to the Federal Academic Salaries Tribunal. They will also lack access to the state industrial commission or to any local tribunal.

"There is no arbitration machinery open to academic staff of the Pilbara colleges at this time," the federation says.

Part of the difficulties facing academics looking for work in either of these colleges is that they will involve both advanced education courses and technical and further education programmes which lead to post-secondary technical certificates. The colleges at Port Hedland will concentrate on programmes for training apprentices and tradesmen in industry.

But since these are in the TAFE and not the advanced college area, this raises academic demarcation problems. The other problem is that in Western Australia, the state government has legislated to prevent college academics in that state having access to state salary tribunals on the grounds that they are not "workers".

Untouchables lose places

from A. S. Abraham

BOMBAY. In a judgement of far-reaching significance, the high court of Madhya Pradesh state in central India has quashed a recent provincial government order permitting Untouchables and tribal candidates to take up places legally reserved for them in the state's medical colleges without having the minimum entrance qualifications.

There are 218 places reserved out of a total of 720 in six medical colleges for the two groups. Without state protection, hardly any Untouchable or tribal candidate would win a place in the fierce open competition that medical (and engineering) college admission attracts through the competitive examination.

Only Untouchable and tribal candidates have entered since the order. The judgement was on separate petitions filed before the state high court by an unprotected candidate and by the secretary of the Madhya Pradesh branch of the Indian Medical Association. The association had threatened to withhold medical recognition of the colleges.

Social Democrats disappoint the reformers

from James Hutchinson

BONN. The statement of the West German government's policy for the new four-year term, presented by the Federal Chancellor, Mr Helmut Schmidt, has greatly disappointed the academic world. Gone are the days when the Social Democrats and their Free Democratic partners would promise ambitious educational reforms. In a speech lasting nearly two hours, the chancellor devoted only a few minutes to the subject of education, and his brief references to the university sector consisted mainly of a plea to the universities to make better use of the space and facilities available to them.

As previously reported, the

federal government is drastically reducing next year's budget for the building of university extensions and of student accommodation. It has since been disclosed that though the sum to be spent on grants, around DM2.4 billion (about £533m), will not be cut, the government intends to freeze this amount at its present level even though the number of students is rapidly increasing. It is expected that West Germany will have about 1.3m students by 1988.

The West German Association of University Rectors has proposed a series of interim measures to ease the acute shortages of accommodation. It could take over empty houses or lease hotels for use as student hostels. The association believes that such short-term solutions are urgently necessary, but that in the longer term the Government will have to make money available for an extensive building programme.

The university rectors report that many foreign students in West Germany are in increasingly dire straits. Many foreigners come to Germany to study not least because university tuition is free of charge—a particular attraction for the financially hard up. Many of them come off badly in the mad rush to find places to lay their heads. The university rectors are making a special study of the plight of foreign students.

Union president resigns in wall slogan row

Students at four of New Zealand's seven universities have succeeded in forcing the resignation of their national union president, Mr Shiban Wilson, following his conviction on a charge of causing wilful damage. The charge arose from a slogan on a city wall protesting at the visit to Wellington in September of a US nuclear warship, the USS Intrepid.

with Caroline Masson, 21, bus driver in Wellington district court. Both had pleaded not guilty. Mr Wilson had asked the NZUSA committee students bodies around the country to defer their decision on his future pending the result of an appeal. But he is now "flat broke", and looking for a job following his resignation, which was tabled at the start of a meeting of student representatives and accepted after debate. "I decided not to appeal. Appeals cost money and I am flat broke," explained Mr Wilson. He said he believed that the recent "incident" was blown out of all proportion because of a continuing battle between NZUSA and the education minister, Mr. Mary Wilson, who has refused to deal with the union because Mr Wilson was a Marxist.

Principals defend arts graduates

from John Walshe

DUBLIN. University heads have been rallying to the defence of arts graduates who have been the subject of much criticism, particularly from the Confederation of Irish Industry.

The confederation asserts the taxpayers' money is being used to subsidize the overproduction of graduates who comprise nearly half the annual graduate output from the universities. This subsidy continues at a time of acute shortage of skilled personnel for new industries, especially in the rapidly growing electronics sector.

Last year the shortage was so bad that Irish government agencies had to launch a major recruitment campaign in Britain while a second campaign is getting underway now.

The confederation's claims have been echoed from time to time by government ministers, by economists and even other educationists. The chorus of complaints could not have come at a worse time for the universities; they are struggling with their worst costs in years and there is little or no sympathy for their demands for extra cash to continue on.

But they are beginning to fight back and go into the public arena in defence of their graduates, art and otherwise.

Professor Tadhg O'Carroll told a conferring ceremony in University College, Cork that the public would come to believe that arts graduates were "useless" if such claims were not contradicted. He felt the universities were being blamed unfairly for contributing towards the creation of a major manpower mismatch.

Critics of the arts degree failed to recognise that it covered an extremely broad spectrum, ranging from history to music, from mathematics and computer science. "Any country which attempts to plan its future without taking account of its past, has a bleak future," he said. "The day we have no historians and no archaeologists we are in trouble as a nation and we are in trouble enough as it is."

Dr Colm O'Hea, president of University College, Galway, was somewhat more conciliatory. He acknowledged the rapidly growing need for well-trained scientists, engineers and managers. But he stressed the complementary role of graduates in the humanities and social sciences. Both groups must work together so that society could continue to adapt the rapidly changing world to the human dimension, he added.

The president of University College, Dublin, Dr Thomas Murphy, another conferring, said that the pressure for technological and other changes was not a new phenomenon. Some of the measures required were applicable to universities for an "intrinsic value of the arts in our universities. Instead of contraction in the faculties of arts in our universities, there is ample evidence of the need to move in the opposite direction."

The president's strongest argument, and one the universities hope would bury the myth, was a survey of arts graduates who got on well in the five years after leaving university. The survey, for the Higher Education Authority, a statutory body, by Derek Schofield, secretary, was appointments officer at University College, Dublin.

Less than 2 per cent of the graduates at the time of the survey, 4 per cent were in teaching, 4 per cent were in banking, 4 per cent were in publishing, 4 per cent were in the advertising industry, 4 per cent were in the insurance industry, 4 per cent were in the legal profession, 4 per cent were in the media, 4 per cent were in the public sector, 4 per cent were in the private sector, 4 per cent were in the voluntary sector, 4 per cent were in the armed forces, 4 per cent were in the civil service, 4 per cent were in the police, 4 per cent were in the fire service, 4 per cent were in the health service, 4 per cent were in the education sector, 4 per cent were in the social services, 4 per cent were in the housing sector, 4 per cent were in the transport sector, 4 per cent were in the energy sector, 4 per cent were in the water supply, 4 per cent were in the telecommunications sector, 4 per cent were in the information technology sector, 4 per cent were in the media, 4 per cent were in 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Holding on to tenure

Are jobs for life fast becoming a luxury universities can ill afford? Ngaio Crequer and David Jobbins report

The concept of academic staff tenure in the universities is for the first time coming under careful scrutiny. The conventional assumption of a job for life for the competent lecturer who avoids serious misconduct is being closely examined by university authorities who are under increasing pressure to come to terms with the economic reality of the recession.

The issue is whether tenure, regarded as a major defence of academic freedom, is a luxury the universities can continue to afford as resources dwindle and the character of higher education is on the verge of being subjected to a more drastic approach.

Tenure gives the young academic the ability to pursue his or her own line of research and question senior colleagues' findings and judgments without the fear of being singled out.

Whether the floodgates of jealousy would open if the protection afforded by the convention of tenure was removed remains to be seen. It is true that established cases in the public sector, where there is not the same tradition, are rare but this could be because of the smaller and different nature of the research work in the polytechnics.

The Education, Science and Arts Select Committee on the funding of higher education was concerned that in asking institutions to rationalise and try to preserve quality, they need a degree of flexibility.

While it saw tenure as an "essential bastion" of academic freedom, it also said "it should not be allowed, as it sometimes does, to act as a barrier to the rational development of new courses and the unnecessary preservation of redundant ones".

The committee recommended the introduction of fair redundancy schemes (without specifying whether they meant voluntary or compulsory) and said the Government should examine the concept of tenure in higher education and that in future a smaller proportion of appointments should carry tenure.

The minority report went so far as to say the Department of Education and Science should publish a discussion document on an approvals process for tenured posts.

Appointments to tenured posts involve forward commitment of public funds on a scale which, if measured on an actuarial basis in terms of "present cost", dwarfs many building and minor works projects which are subject to stricter systems of financial control and prior approval, it said.

The Public Accounts Committee took a rather different view. It said it did not consider it appropriate to comment on the possible need for a

compulsory early retirement scheme, and said no scheme should be introduced unless it were cost effective in both the educational and financial sense.

Under questioning, Sir James Hamilton, permanent secretary at the Department of Education and Science had told the PAC that the majority of university lecturers had contracts of retiring age. "If we would try to change that position we could only do so, apart from the obvious device of breaking the contract by setting in hand further arrangements which would encourage the voluntary ending of employment, and these, of course, involve a certain cost."

But things seem to have moved on since then. Dr Edward Parkes, chairman of the UGC, has told vice-chancellors that the closure of departments, which may involve litigation, is likely. "He is ready, he says, to lend them a 'financial pruning knife' to help them to rationalise their growth."

So the attempt by individual universities to introduce rationalization have been done on the basis that staff will not be dismissed but might be asked to transfer departments or even go elsewhere.

"Money is available for staff who need to transfer to different departments, if their department is forced to close. But to make large numbers of staff redundant, or even to fight the first test case, will

require sums of much greater magnitude. The Committee of Vice-Chancellors is currently examining the legal position of tenure to see exactly where it stands.

Already, unions are making it quite clear what their response is. General Secretary of the Association of University Teachers, Mr Laurie Sapper, believes that the drive against tenure has the origins in the aims of a small group of university vice-chancellors.

He told an association meeting in Manchester: "Just as dangerous to the universities as the public expenditure cuts are the actions and pronouncements of a minority of power-hungry vice-chancellors who are using financial stringency to try to introduce policies of hire and fire into the universities."

More and less than the ability to get rid of staff so that their individual authority can be increased within their own institutions.

We shall resist all attempts to end tenure first from the point of view of the staff themselves and secondly because tenure is one of the safeguards of academic freedom."

Later this month the issue raised by disclosure of the vice-chancellor's intentions is to be taken up at the AUT's council.

A resolution expressing anger at any attempt to bring a test case on the whole tenure and redundancy question calls for assurances from universities that they will not embark on action.

candidate for closure within the institution.

An employer can also dismiss someone "for some other substantial reason" which in the past has been used when companies have been reorganized. The word rationalization springs to mind. But again the employer must show reasonableness, and reasons for selection will be paramount.

The University Grants Committee has made it clear (as no doubt the Government has made clear to it) that money would not be available for a Crombie-type solution in the mid-1970s. But the likelihood is that there will be far more concentration of specialisms between institutions. Whether staff could be forced to move if resistant would be the first legal battle.

The amount of notice required, even of authorities who are complying with the 1975 agreement which recommends a minimum of one year has so far been enough to marshal a broad-based campaign against threatened redundancies.

The question for the coming months is whether this can be sustained in the face of tougher cash limits and the growing expertise and near-desperation of the local authority employers.

Increasing use of premature retirement compensation schemes and redundancy has taken much of the heat off the polytechnics and colleges, fortunately so in the light of the ambiguous and workable nature of their procedures for compulsory job shedding.

Whether this will be adequate to cope with the new round of cuts in central and local government spending is unlikely. This extra spur may produce a new redundancy procedure, agreement, negotiated through the national joint council. But if the council fails to emerge, lecturers will have to revert to their tactics of resisting redundancies through increasing odds on educational grounds.

One thing is clear and that is that the Crombie Code, which was surprisingly effective in compensating lecturers who lost their jobs in the rush of college of education closures in the mid-1970s, will not be extended from its limited scope to deal with any new radical rationalization.

The tech, now Strathclyde University, traces its roots to 1796, founded by John Anderson, professor of natural philosophy at Glasgow University, patron of James Watt and friend of Adam Smith.

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It is his abiding belief that the vital contribution higher education makes to industry is Britain's main hope of improving the quality of life of the people. He constantly argues that Britain's industrial performance must improve to pave the way for a truly caring society.

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But Sir Samuel is puzzled and distressed by the continuing decline in productivity despite the country's scientific expertise and capacity for innovation. "Even France has jumped ahead of us in manufacturing. And while they've always been an ingenious people, they've been poor in industrial terms."

This failure to manufacture, says Sir Samuel, is a problem which the Government should be turning with great urgency. At the moment, he says, the country is allowing the influence of a few more modern institutions such as London University has grown markedly over the last century.

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Polytechnics beat off the vultures

Despite the assumption that tenure is exclusive to the universities, polytechnic and college lecturers demonstrated during the current round of cuts that they can resist redundancies very effectively.

Legally they are entitled only to the same legal protection against unfair dismissal and unfair selection for redundancy enjoyed by all full-time employees. Therefore they have the bastion of academic freedom that university lecturers are eager to preserve.

Theoretically they are fully exposed to the effects of professional and academic jealousy and settling to which the university staff are immune.

With the exception of the colleges of education colleges of the mid-1970s, they have so far been immune from the compulsory redundancy which almost universal success.

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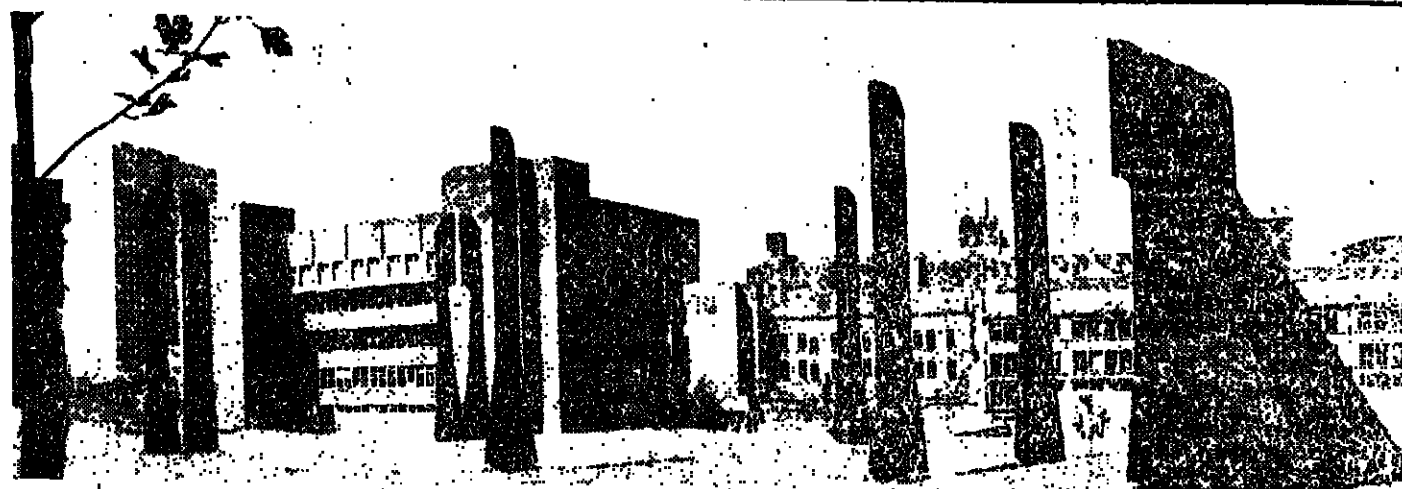
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Sir Samuel (left) fought for university status for Strathclyde.

A technological crusader

Sir Samuel Curran who has just retired as principal and vice-chancellor of Strathclyde University talks to Olga Wojtas about his 21 years there

Twenty-one years ago, Sir Samuel Curran told the governors of Glasgow's Royal College of Science and Technology that he wasn't interested in taking over as principal unless they wanted the tech to become a university.

The governors said they had hoped for nothing less. And so Sir Samuel began his battle with the University Grants Committee which took the view that there could not be two universities in one city, and that the Tech was a mono-faculty institution and hence unworthy of the title "university".

"The university system didn't really know technology," says Sir Samuel. "There was the faculty of technology in Manchester, and Imperial College in London, but they were contented the way they were. There historical development was different from ours. This institution always wanted to be its own master."

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"We've nothing to be ashamed of in Britain with our universities, system, and my impression is that we give very good value for money."

Having begun his association with Strathclyde in conflict with the UGC, Sir Samuel is ironically retiring under the same conditions. Strathclyde's Russian course is one of these marked-down for transfer in the Atkinson report, and the principal is obviously deeply shocked that such a move should have been made without reference to the universities involved.

Sir Samuel refers to the UGC with studied politeness. "They should really go back and look at their terms of reference from 1910, and see whether the Government has at any time given them the right to do this."

The principal stresses that Strathclyde has no pre-empted determination to cling to its departments, should they really go back and look at their terms of reference from 1910, and see whether the Government has at any time given them the right to do this."

No, said Sir Samuel, he came to think that he could improve his contribution by having made and more scientists whom he tried to lead. "It's well known that scientists on the whole don't get better with years, and so if you're wise you use your experience to let others make the real progress."

Glasgow is fortunate in its opportunity to benefit from Sir Samuel's experience, Strathclyde already knows that it owes its existence to him.

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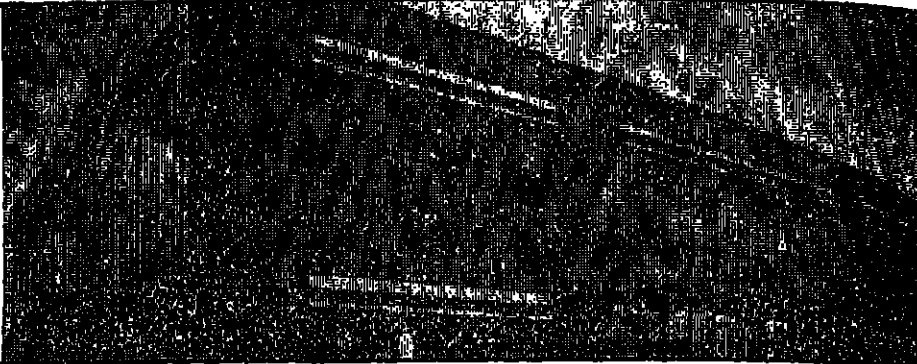
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And while

Whip, to give immediate expression to the joyful emotions which, *no doubt, they felt.* Having begun to sit up and take nourishment, *Spence* moved to break the silence with convalescent whispers.

For a good many years the Labour Party has been in the habit of stating in its programme and on public platforms that it stands for Social Equality. It is *questioned* that article in *creed* as too embarrassing to *read* *luggage?* Or does it support the view that it is *difficult* to believe in Equality, if it is not in *its* heart, believe in itself? And does it expect to persuade *them* of the genuineness of its convictions, if *promised* continued on next p.

جایزه



November, 1936 left him "cheered and stimulated". In February 1937 he joined John Dowey's committee to investigate the Soviet charges against Trotsky, and denounced

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BOOKS

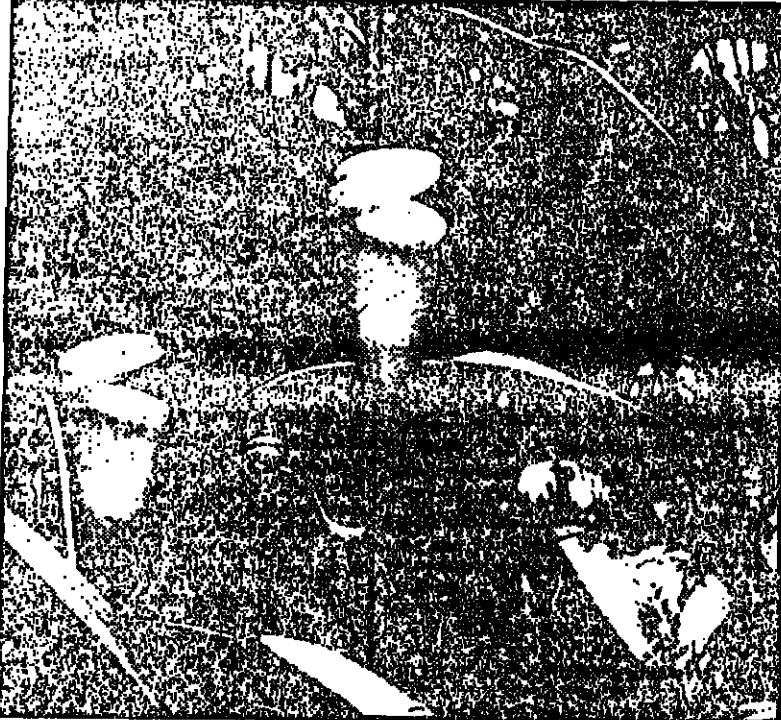
Defining the limits of scientific ecology

What is Ecology?
Oxford University Press: Oupis,
£6.50 and £13.50
by D. F. Owen
ISBN 0 19 219 155 1 and 289 140 5

I wonder whether Confucius ever made such a statement as, "He who seeks to bridge gaps is in danger of falling between stools"? Probably not, but there is, nevertheless, an element of truth in it. The sentiment must also have been in Denis Owen's mind as he wrote this book, for he has attempted to bridge what he regards as a major gap in the ecological literature. He believes that ecology books are either formal and technical, and assume a basic knowledge of biology in their readers, or that they have a social, economic or political slant and concentrate upon the environmental problems surrounding man.

The existence of this gap is, however, questionable. The books of R. E. Ricklefs (*The Ecology of Nature*, Blackwell, Oxford) and Paul Colwell (*Introduction to Ecology*, Wiley, New York) are essentially biological in approach, yet incorporate many illustrations which emphasize the involvement of man in ecological systems on a global scale. But the aim of the author of this book is to provide, in language which the non-specialist will understand, an expanded definition of ecology which will enable the reader to view man in an ecological perspective.

The introductory chapter concentrates upon the value of sound ecological knowledge in the everyday activity of man. The danger of over-simplification, however, immediately becomes apparent. The evils of monoculture, for instance, are described as the abuses of pesticides. Although one sympathizes with the emotional response of the author to these practices, one must consider the alternatives from an economic as well as an ecological viewpoint. The idea of "neat rows" of crops is viewed with disdain, whereas the "haphazard arrangement of different sorts of crops" reputed to be a



Pitcher plant (*Nepenthes madagascariensis*). Illustration taken from *A World of Our Own: man and nature in Madagascar*, by Alison Jolly, with photographs by Russ Kinne, published by Yale University Press at £18.90. Jolly and Kinne "take readers on a tour of the 1,000-mile-long island to see the extraordinary plants and animals of its rain forests and spiny deserts".

feature of peasant cultivation is preferred. The advantages, apart from aesthetic ones, relate to pest control, the author claims. Hemp (*Cannabis sativa*), we learn has been found to deter the mole cricket when grown among crops in the Soviet Union. But is he really recommending that we grow the odd row of *Cannabis* among our potatoes? This sounds rather like incitement to illegal botanical activity. Fortunately, potatoes are not troubled by mole crickets. The concept of companion plants in crops is certainly of interest and could be of value, but it must be

considered in economic as well as ecological terms; on an agricultural scale the harvesting problems could be considerable.

The basic tenet which this chapter seeks to illustrate, however, is that in agriculture, in gardening, even in angling, we are essentially dependent upon our knowledge of ecological principles to guide us. I would not quarrel with this, but would add the rider that in the case of large-scale human activities, such as agriculture, the economic aspects cannot be brushed aside. The book then moves into an explanation of some fundamental

principles of ecology, and begins with the study of population dynamics. The author approaches this subject with a discussion of exponential growth, which he covers skilfully by verbal and graphic illustration. As examples of exponential spread he then takes certain species which have shown large expansions in population and geographical range over the past century or so, such as the rose-bay willow herb and the European starling in North America. But no evidence is given that these increases are exponential although they are claimed to be so by the author. This, coupled with a lack of mathematical treatment of the subject, could confuse the reader regarding the precise definition of exponential growth. Neither is a clear definition of the term "exponential increase in the demand for resources and the asymptotic population growth curve which results from resource limitation, although some well-selected data on thrushes and snails are tabulated. The subject of population regulation in general is treated by reference to a series of illustrations, mostly taken from nature.

Community ecology, naturally, involves an explanation of the niche concept, and once again this is tackled by the description of a series of examples, as are subjects like species interaction, succession and food webs. These discussions culminate in a consideration of the ecosystem. A chapter on natural selection follows, the position of which seems somewhat uncomfortable; perhaps its treatment has been more appropriately placed adjacent to the niche and species interaction sections.

Finally, we move into the areas of sociology and politics with the question: "How does ecology affect us?" Here the language of oversimplification once more rears its ugly head and such bold statements as the following are made: "man is part of nature and the rest of nature was not put there for man to exploit, the claims of business, political, and religious leaders notwithstanding".

Peter D. Moore

Peter Moore is senior lecturer in plant sciences at King's College, London.

Measures of divergence in developmental biology

An Outline of Animal Development
by Richard Davenport
Addison-Wesley, £8.50
ISBN 0 201 01814 4

Developmental Biology
by Leon W. Browder
Holt-Saunders, £11.95
ISBN 0 03 056748 3

Animal Development
by Arthur F. Hopper and Nathan H. Hart
Oxford University Press, £13.95
ISBN 0 19 502569 5

Put half a dozen developmental biologists together to design a foundation textbook on their subject: would they easily agree on its content and emphasis? If these three books are a guide, the answer must be "no": they might not even agree on the desirability of producing a comprehensive text at all.

What, as a chairman's guide, would these books offer? Value for money: prices are similar at just over two pence per page. Browder wins on richness of illustrations (on average, one page in two is picture rather than text). Hopper and Hart offer some photographs but concentrate on diagrammatic illustrations, mainly two-colour line drawings, and use a split page layout to allow illustrations to occupy the page on which the text refers to them. Davenport makes sparing use only of line drawings.

References are given at the ends of chapters. Browder aims at completeness and is impressively up to date: as an example, 52 pages of fertilization have 93 references, mostly to the primary literature of the past decade. Hopper and Hart take 23 pages and 23 references to the same topic, and are not quite up to the minute. Neither of them has a clear policy on the use of references: Hopper will prefer

Browder's completeness, but unguided students will find it difficult to know what is worth a deeper look. Davenport does not bother a great deal with references, but does often divide these rather arbitrarily into "further reading" and "references". Many of these will not be of much use to the average Anglo-Saxon student, or teacher, who is competent to have the time or the competence to tackle Hoffer, Roux and others in the original German. I find it surprising that in designing a student text, these authors seem to have devoted so little thought to a policy on further reading.

It is in content and emphasis that these books differ most. Browder's book is characterized as molecular. Hopper and Hart, as anatomical. Davenport is philosophical. As a crude measure of this divergence, there are only nine index entries under the letter "A" known to all three books (from a possible 105 entries in Hopper and Hart). The prefixes provide justifications for the disparate approaches: each author acknowledges that the exposition of recent research makes a fully comprehensive text impossible. I will briefly describe each book's coverage, then give a comparative evaluation.

Browder's emphasis is on early events in development, and his is the only one of these books to include some material on plants. He takes 150 pages to reach the end of cleavage, and only 130 pages for the whole of the rest of development. Fertilization gets the same amount of space as the whole of organogenesis. Not surprisingly, therefore, morphogenesis is treated in a select, but summary, and the level of discussion is a quantum leap below that of early events. The molecular-genetic approach is its strength, and a useful feature is the inclusion of separate boxes

notes on techniques like electrophoresis and ultracentrifugation. In contrast, Hopper and Hart start to gastrulate on page 135 and devote 460 pages to the development of the main organ systems of vertebrates (invertebrates are rarely mentioned). They believe that the central concern of developmental biology is the unfolding pattern of morphological events, and that insights into mechanism and genetic control should be integrated into a description of these events. The result is a heavily anatomical text, biased towards mammals and leavened with explanatory diagrams.

Davenport's book is hardly a textbook at all, though it has been developed from what must be a more unusual lecture course. It is more a book of ideas in the tradition of a work like Bonner's *On Development* (Harvard, 1974). The kind of broad-brush contemplative treatment given in such books is more common in developmental biology than in any other branch of life science because of its intractable fundamental problems.

Like Browder, Davenport concentrates on early events, but in a very different way. He gives brief accounts of protein synthesis and gene regulation, but his main concerns are the old problems of fields, pattern, regulation, determination and, in a rare use of nowadays, individualization. Notice that these are all problems that concern the whole embryo. His preface makes clear his intent of presenting "the basic information that not only forms the focus of our present knowledge, but will provide as the reference point for all future discoveries".

He does not strive to be up to date: the central problems of development have been known for some time, but where necessary, as in the selection of cell determination in mammals, the latest recent developments. The unique feature of the book is the final section, "our chapters which present a new view of the whole of development".

tion that the reductionist approach, favoured by geneticists and molecular biologists, is incapable of providing a full understanding of development.

Before leaving content, I must mention omissions. It is unfair to spend too much time on what authors leave out, but potential readers need to be warned that none of these books offers comprehensive coverage of the field. Important areas left out, or only briefly mentioned, include growth control, regeneration, aging, supra-molecular assembly, insects, and the relationship of ontogeny to phylogeny. Most surprisingly, that famous honorary embryo, *Drosophila melanogaster*, receives a brief mention in only one of these books (Browder).

Finally, my impressions of these books. It is of course, much easier to criticize than to write a textbook, and I admire these authors for even considering such a daunting task. In offering an opinion, I expose my own interests as much as I make a valid comment.

As my Browder's book is the least useful of the three. The text is competently and clearly written, but, in concentrating on molecular aspects, he risks appalling omissions: the field changes too fast. Furthermore, the book simply lacks balance. It gives the impression that someone advised the author that a book only on early events in development would not sell, and that a few pages on organogenesis should be tacked on.

Hopper and Hart are on safer, more traditional ground. My respect grows for their integration of experimental analysis into an anatomical framework. However, I doubt that many staff of students will want quite as many anatomical terms as they give, and this organizational approach falls down, where the selective approach would have been useful. As an example, the idea of gastrulation is mentioned in the

a general chapter on morphogenesis, but with no cross reference or index entry to a fuller account in the chapter on the nervous system. My main irritation was with the emphasis on mammals. The chapter on a range of animals, but these on spermatogenesis and reproductive physiology apply only to mammals, and make no mention of invertebrates. Justification for Davenport's is the most thoughtful and stimulating I have read. To re-read much of it and can recommend it to all students of development, no matter how much they already know. However, most teachers will find it a standard text-book—it is too individual in tone and does not present the consensus view.

The final chapter of the philosophy behind our studies of development make difficult reading, but are worth the effort because they present the neglected holistic view that the properties of a system cannot be deduced from the properties of its parts. We should not allow the successes of a developmental approach to obscure how little is known of how whole embryos work.

Davenport offers a path to understanding cytoplasmic microtubules by illustrating this notion in a test tube. Microtubules assemble spontaneously from their subunits under various conditions, but in a cell assembly is under a system of control that ensures it is controlled in time and space.

Is there a "best buy"? Probably not, as the needs and emphases of courses in developmental biology are now so varied. But Davenport will certainly stimulate the most thoughtful.

Roger Down

Roger Down is lecturer in zoology at the University of Cambridge.

BOOKS

Bare essentials for the simulation of intelligence

Philosophical Foundations of Cybernetics

by F. H. George
Black Press, £15.55
ISBN 0 8526 163 7

Machines Who Think
by Pamela McCorduck
Freeman, £8.70
ISBN 0 7167 1072 2

It would be a travesty of the history of science, though not a complete one, to describe chemistry as having lagged alchemy about with it for centuries like some vestigial, but apparently dead, siamese twin. Something like the same relation exists in our time between artificial intelligence (AI for short) and cybernetics. The two seem to share overlapping principal aims: the study of intelligent human functions by means of the simulation of such functions. Cybernetics has tended to concentrate on learning, beginning with simple mechanical devices that could learn to thread mazes, while AI went straight for the intellectual jackpot: language, vision, and the game of chess.

The differences tend to correlate with the sorts of psychology each field interesting: cybernetics was closely associated with behavioural psychology (hence the emphasis on learning) and on physiological psychology in the belief that the structure of the brain could be important for the understanding of intelligent behaviour. AI, on the other hand, has always looked to what is called cognitive psychology, and its usual dismissal of learning as too difficult for immediate investigation. Let us, said the AI men, concentrate on simulating some interesting stage of language behaviour, or chess playing, on a computer and worry later about how the stage might be learned. Total detachment from the physical brain was also a principle of method: the brain, it was argued, is just a white box, and what we know of its structure does not confirm or deny any interesting theories. Total detachment from the physical brain was also a principle of method: the brain, it was argued, is just a white box, and what we know of its structure does not confirm or deny any interesting theories.

Cyberneticians have had a greater partiality for philosophical arguments than AI men, just as did alchemists when compared to chemists. The subtle, mechanistic structures required to support complex linguistic or visual cognition. Some believed that there might be interesting structures to be found in the brain, but that, like learning, they were far too distant from the brain to be of use. Others thought that perhaps the brain contains no interesting structures: that it may be as uniform and simple as a digital computer, and no more than arrays of

nerves acting as on-off switches. On this view, the interest of the brain would be in its programs, not its structure, just as any intelligence a digital computer can show must reside in its programs (or software), rather than the electronics (or hardware).

This passionate attachment to the digital (or universal) computer was always typical of AI, whereas cybernetics was more catholic about the range of machines in which intelligence might be sought. In particular, cyberneticians were interested in analog computers that use physical processes, functioning with continuous variables, which is to say not only with natural numbers like 1, 2, 3, and so on, AI, on the other hand, has always been far more attached to logic than to numbers and statistical methods.

This catalogue of differences of emphasis is of interest only because very general shifts have recently occurred in surrounding disciplines that could now lead to some reaction in favour of cybernetics after its long night of subordination to the brighter constellation of AI. It will be remembered that historians of science doffed their hats briefly to the memory of alchemy in the early part of this century, when physicists were finally able to claim its element into another by nuclear bombardment, thus fulfilling a medieval dream.

This shift of opinion has been in part philosophical: the strongest criticism AI has received was from one philosopher, Hubert Dreyfus, who, though no cybernetician, argued that there could be no AI until a machine learned to function intelligently just as we do. In other words, he argued that learning is essential to the simulation of intelligence, as cyberneticians had always claimed.

Cyberneticians have had a greater partiality for philosophical arguments than AI men, just as did alchemists when compared to chemists. The subtle, mechanistic structures required to support complex linguistic or visual cognition. Some believed that there might be interesting structures to be found in the brain, but that, like learning, they were far too distant from the brain to be of use. Others thought that perhaps the brain contains no interesting structures: that it may be as uniform and simple as a digital computer, and no more than arrays of

Non-metallic magnetism

Interactions in Magnetically Ordered Solids
by K. P. Sinha and N. Kumar
World University Press, £12.50
ISBN 0 19 851423 9

In the man in the street the word "magnet" is most likely to conjure up an image of a bar of magnetized iron, a metal. The practical application of magnetism to man was, however, in the form of an insulating material, magnetite (Fe₃O₄), the magnetic constituent of the early mariner's lodestone compass, and perhaps also that of hominids. It is with non-metallic magnets that interactions in Magnetically Ordered Solids is concerned, and the book is heavily theoretical, not microscopic and not for the student of introductory physics. In fact, the authors give as its intended readership "postgraduate students contemplating research in condensed matter physics or related areas of solid-state physics". They seem to assume some basic knowledge of quantum mechanics (in both first and second quantization), perturbation theory, the elements of statistical mechanics.

The magnetism of non-conducting solids is due to ions with non-zero spin, momentum and, hence, magnetic moments. These moments can be ordered by an applied magnetic field, even when the ions are in fluids, temperatures are high, and low temperatures they order cooperatively without an external field. Both senses are on the book, but emphasis is on the former. Practically every conceivable type of magnetic interaction is considered, and the book ends with a chapter on the

line electric fields, of the magnetic moments with external fields and with one another, and of the elementary magnetic excitations with one another, with the electrons and phonons of the solid, and with external probes such as neutrons, electromagnetic radiation and temperature. The book is a brief chapter on magnetic behaviour.

Discussion is essentially restricted to pure stoichiometric materials. Within these restrictions its 180 pages cover a great number of individual topics. Unfortunately, however, coverage of any one topic is too brief to give more than a whiff of its flavour. Complicated formulae are often given, without derivation in many cases, for several different idealized examples when more explanatory prose for a subset of the examples would be of greater help to the proposed reader. He would, in any case, be driven elsewhere for detailed analysis of the real world.

The reader also faces possible confusion by imprecision. Several results are presented as having greater generality than is the case, assuming that the very first case, mentioned in the book. Derivations are often muddled as to the situation to which they refer. The derivation of the RKKY exchange is a particular case, appearing without impurity in the middle of the section and the whole analysis presented, without comment, for a simple metal, despite the book's stated restriction to non-metals. Perhaps, however, the student might be provoked by some such provisions on reading the title of the book. "Conduction-Electron Magnetism" in "Ferromagnetism" is a considerable misnomer. It is actually

likely only a few years ago and, secondly, that AI itself is moving towards "specialized hardware" to the construction of computers that physically embody a program in language, and thus break down the hardware-software distinction on which so much of the difference between AI and cybernetics rested.

These recent trends might be expected to lead to a revival of cybernetics if that discipline was still around to inherit its luck. Or rather, if there was still some identifiable school of researchers about that could state clearly what cybernetics is or was. The first book under review might seem, at first sight, to do that.

The chapters of Professor George's book promise a great deal. "Artificial Intelligence and the Interrogation Game", "Scientific Method and Explanation", "Gödel's Incompleteness Theorem", "Determinism and Uncertainty", and so on. But it is far from clear that there is any simple study, or set of claims, that these chapters are foundations for. There are summaries at the ends of chapters: "Gödel's incompleteness theorem has no implications for mechanism, does nothing, in other words, to make one think that a human being could not be an artificially constructed system" (page 37).

The mode of defence of such statements in the book is clearly intended to be philosophical, in keeping with its title, rather than anecdotal or empirical. But philosophical is what it is not, for the book in fact consists of undergraduate summaries of a selection of philosophical disputes of the 1950s and early 1960s.

Being out of date is not a mortal sin in philosophy, and it could in principle be useful to have a clear account of Lucas on Gödel and machines, and of Mackay on freewill and machines, and so on. The real problem is that the issues are never set out clearly at all. Notorious difficult distinctions in the literature which by literally as fast as "[Grice] accepts the distinction between natural and non-natural meaning" (page 89). No more than that is said, and a distinction that takes at least half an hour to make at all comprehensible to students!

Philosophy is done at third hand by acclamation: "Nagel and Newman, as quoted by Arbib, say the following 'Gödel's conclusions bear... On the other side of the fence

we have the view of Hilary Putnam, also quoted by Arbib..." (page 33). Some of these arguments had considerable life in them 20 years ago, but none of them is worth reviving now, especially not in this thin, skimmed, form.

There is no mention anywhere in the book of the discussions of philosophers of the past decade; of issues like the consciousness of machines, of the Turing machine as a model of the body and mind, of the theory-bound nature of belief. The relevant names of Putnam, Dreyfus, Dennett, Gunderson, and others, simply do not appear in the text, even though, as I pointed out, George should find at least one of them highly congenial.

And the prose. Long staggers in search of the oasis of a verb. The hunt for the shade of a properly closed clause: "Bearing in mind, the problem as seen from the viewpoint of the interrogation game (this particularly deals with other minds)", let me say that the questions of 'free will' and 'consciousness' are later discussed in detail" (page 8). "Most everyone seems to believe the latter, but Mackay is unusual in choosing a definition of determinism which is explicitly 'phenomenalistic'" (page 46). "We can of course represent the emotions by some mathematical means in the systems as just another constraint that operates in cognitive activities" (page 65). The fruits here, and they run right through the book, are more than merely stylistic: lost verbs and outdated Americanisms. Here, in the middle of the sentence, is the endless succession of philosophical questions to summary and head-counting. In the last sentence is that quick leap across a gap that needs a whole chapter of detailed analysis and justification.

It is true, however, that the last quotation is qualified in the next paragraph, though perhaps not in a way to restore confidence: "We have to be extremely careful in

describing emotions, partly because this is a very subtle subject which has been extensively studied by experimental psychologists, and also because in talking very generally about the emotions, we are tending to do what philosophers so often do, i.e. ignoring empirical evidence in the interests of some sort of logical argument" (page 66).

In sum, the book is not philosophical, nor does it constitute a foundation for anything, let alone cybernetics. Perhaps somewhere out there is a cybernetician waiting to come in from the cold and give us a coherent account of what his discipline is.

Pamela McCorduck's book is a great relief: an unashamedly gossipy history of AI, showing, as it were, the human face behind the mechanical brain. Ms McCorduck is the wife of the former chairman of the department of computer science at Carnegie Mellon University (though she doesn't tell us). I mention this because it explains the skew in the book: what is mentioned about American and British AI comes from her personal and family contacts, and conversely for what is left out.

And why not, for gossip never aims for completeness or fairness? And simply chatting to whoever happened to be around as she toured the great AI laboratories has turned up a great deal of entertaining realisation: I had no previous conception of Turing, for example, as a dogged marathon runner. Occasionally the relentless *Cosmopolitan* upbeat flags a little; sometimes the tape recorder must have jumped a sprocket to create a playword. Prevost of Kings like Sir John Stoppard (sic) (page 51). It is a great intellectual romp and there is not a philosophical foundation in sight!

Yorick Wilks

Yorick Wilks is professor of linguistics at the University of Essex.

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David Sherrington

David Sherrington is reader in theoretical "solid state" physics at Imperial College, London.

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All positions are to be filled by February/March 1981, so only those applicants able to make this date should apply. Interviews will be held in early January 1981.

Please write or telephone, quoting reference V18/PSC-ADCOL/56, for application forms (to be completed in duplicate) and further details to: The Recruitment Attache, Papua New Guinea High Commission, 14 Waterloo Place, London SW1R 4AR. Telephone: 01-930 0925.

Papua New Guinea



Holidays and Accommodation

For further information, contact the Recruitment Attache, Papua New Guinea High Commission, 14 Waterloo Place, London SW1R 4AR. Telephone: 01-930 0925.

Personal

IMMEDIATE ADVANCES £100 to £20,000. Write to: REGIONAL TRUST LTD, 51, Colindale Avenue, London NW9 1ST. Tel: 01-305 2054.

REMINDER

Copy for classified advertisements in the T.H.E.S. should arrive not later than 10.00 a.m. Monday preceding the date of publication.

Research Posts

PLYMOUTH POLYTECHNIC

Faculty of Maritime Studies Department of Marine Science RESEARCH ASSISTANTSHIP GEOCHEMICAL CYCLES OF TRACE ELEMENTS

A Research Assistant is required to join a multidisciplinary research group studying Geochemical Cycles of Trace Elements. The investigation involves the Global Cycling of Hg, As, Sb and Se. Part of the work will involve further development of a mathematical model of the cycles of these elements. This will be complemented by measurements of their atmospheric concentrations over the North Atlantic and the English Channel.

Applicants should have high academic qualifications in either Oceanography, Chemistry or Environmental Science. Research Assistants are normally required to register for a higher degree, but post-graduate applications are considered on an individual basis. The appointment is for a period of two years commencing as soon as possible with the possibility of a third year (fixed term contract).

Salary will be £4,483 for post-graduate or £5,483 for degree holders (equivalent) with annual increments of £200. Application forms to be returned by Friday, 21st December, 1980, can be obtained from the Registrar, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA.

BELFAST

THE QUEEN'S UNIVERSITY INSTITUTE OF IRISH STUDIES RESEARCH APPOINTMENTS AND GRANTS

Applications are invited for two research and one research fellowships, available in the Institute of Irish Studies from October 1st 1981. The Institute is a body of study relevant to Ireland.

Candidates for the senior research fellowships should be graduates with a first class honours degree in a relevant subject. The salary range is £5,000 to £7,500 per annum. If awarded, the fellowships will be for one year only. The research fellowships are for the study of Irish literature, history, language, and culture. The research fellowships are for the study of Irish literature, history, language, and culture. The research fellowships are for the study of Irish literature, history, language, and culture.

Method of Application: Interested applicants should forward 10 copies of their curriculum vitae giving the following details:

- (a) Name in full
- (b) Place and date of birth
- (c) Present Postal address
- (d) Nationality
- (e) Marital status
- (f) Institutions attended (including dates)
- (g) Academic and Professional qualifications (including dates)
- (h) Statement of work experience (including full details of former employers and present post)
- (i) List of Publications (if any)
- (j) Extracurricular activities outside present employment
- (k) Proposed dates of availability for duties if appointed

Applications should be addressed to The Chairman, Institute of Irish Studies, The Queen's University, Belfast, BT7 1NN. All applications must be received at the Commission not later than 21st January, 1981.

GLASGOW

THE UNIVERSITY DEPARTMENT OF ACCOUNTANCY

Applications are invited for the post of Research Assistant for Multinationals Project. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project.

Salary range £4,200 to £5,000 per annum. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project.

LONDON

INNER LONDON EDUCATION AUTHORITY

A RESEARCH ASSISTANT is required for the Inner London Education Authority. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project.

Salary range £4,200 to £5,000 per annum. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project. The Research Assistant will be responsible for the collection and analysis of data for the project.

Colleges of Further Education

Northumberland County Council

Northumberland County Technical College, College Road, Ashington, Northumberland NE63 9RG.

Appointment of Principal

Applications are invited from suitably qualified and experienced persons for the above post of this Group 5 College which will become vacant on 1 September 1981 on the retirement of the present Principal.

The salary will be within the range of salaries for the Principal of a Group 5 establishment (currently £16,467 to £17,313).

Application form and further particulars may be obtained from the Director of Education, Eldon House, Regent Centre, Gosforth, Newcastle upon Tyne NE3 3HZ to whom completed forms should be returned not later than 31 December 1980.

PORTSMOUTH

MINISTRY COLLEGE OF TECHNOLOGY

PRINCIPAL LECTURER DEPUTY HEAD DEPARTMENT OF CONSTRUCTION

Applications are invited from persons able to teach and offer academic leadership in any area of law and public administration. Candidates should hold a degree and preferably a higher degree, and a relevant professional qualification. Experience in degree teaching or relevant professional work would be an advantage.

Applications should be sent to the Director of Education, Eldon House, Regent Centre, Gosforth, Newcastle upon Tyne NE3 3HZ to whom completed forms should be returned not later than 31 December 1980.

EDWARD MILLER, Director of Education.

Administration

BRADFORD

THE UNIVERSITY OF BRADFORD

DEPARTMENT OF CONSTRUCTION

Applications are invited from persons able to teach and offer academic leadership in any area of law and public administration. Candidates should hold a degree and preferably a higher degree, and a relevant professional qualification. Experience in degree teaching or relevant professional work would be an advantage.

Applications should be sent to the Director of Education, Eldon House, Regent Centre, Gosforth, Newcastle upon Tyne NE3 3HZ to whom completed forms should be returned not later than 31 December 1980.

EDWARD MILLER, Director of Education.

WESTERN AUSTRALIAN ACADEMY OF PERFORMING ARTS PERTH, WESTERN AUSTRALIA

CO-ORDINATOR OF MUSIC STUDIES

The Western Australian Academy of Performing Arts is a new institution established in December 1979 under the aegis and on the campus of Mount Lawley College of Advanced Education.

The purpose of the Academy is to provide performance oriented courses in Music, Dance, Theatre and Film and Television. Of major importance also is the preparation of well-qualified teachers in each of these performing arts areas.

DUTIES

To organise, administer and co-ordinate music courses and activities within the Academy.

To develop and maintain a liaison with other agencies involved in music.

To be available as appropriate to participate in music activities within the Academy and the wider community.

SALARY AND CONTRACT

The successful applicant will be appointed on a salary range between \$42,801 - \$77,740 according to qualifications and experience. Terms of appointment will be subject to negotiation. Conditions of service accord with those existing in the Australian tertiary education sector. Fees, removal and settling-in allowances are available.

APPLICATIONS

For further information and application form contact: The Principal, Western Australian Academy of Performing Arts, 2 Bradford Street, MOUNT LAWLEY 6060, Western Australia.

Telephone: (09) 271 9311

Applications should be sent to the above address by 30th January 1981.



FACULTY POSITIONS YARMOUTH UNIVERSITY IRBID—JORDAN

The Departments of Economics and Administrative Sciences invite applications for teaching positions commencing February, 1981. Preference may be given to applicants with teaching/research interests in the following areas:

ECONOMICS:

- Public Finance
- Labour Economics
- Cost-Benefit Analysis
- Theory of the Firm
- Agricultural Economics
- Industrial Organisation
- Comparative Economic Systems
- International Trade
- Economics of Natural Resources

ADMINISTRATIVE SCIENCES & MANAGEMENT:

- Accounting
- Quantitative and Research Methods in Business
- Finance
- Marketing

Positions are available for Assistant Professor, Associate Professor or Professor. Applicants must hold a Ph.D. Placement will be according to experience in teaching and research. Salaries range from \$7,000 (8 months). Fringe benefits include travel expenses at beginning and termination of employment and for home leave every three years for spouse and members of family; health and life insurance; furnished accommodation at reasonable cost.

Enquiries and applications to: THE DEAN OF ARTS AND SCIENCES, YARMOUTH UNIVERSITY, IRBID—JORDAN.

For further information, contact the Recruitment Attache, Papua New Guinea High Commission, 14 Waterloo Place, London SW1R 4AR. Telephone: 01-930 0925.

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The author is senior lecturer in French at University College, Cardiff.

